In the Specification:

On page 4, line 28 through page 5, line 10, please amend as follows:

In the example embodiment, the maximum in the FBG amplitude versus distance z is initially reduced in the following way: Starting from the FBG amplitude versus distance z shown in Figure 1(a), the amplitude function $k(z)$ is replaced by $\sqrt{A}k_s(z)$, where $\kappa_s(z)$ is the corresponding single channel (seeding) grating amplitude function and the constant A is defined by the normalization condition $A = \int_0^l \kappa^2 dz / \int_0^l \kappa_s^2 dz$. Alternatively $k(z)$ is replaced by its averaged (smoothed) ~~(smoothen)~~ version. Alternatively, the normalising or averaging process may be ~~complimented~~complemented or replaced by any nonlinear transform reshaping ("squeezing") operation, which reduces $\kappa_{\max}(z)$ while keeping the parameter $\int_0^l \kappa^2 dz$ unchanged. The unchanged multi-channel grating phase and the modified (the second) grating amplitude are then used as the input data for solving a direct scattering problem utilising a suitable direct scattering solver algorithm. Thus, a spectral response function corresponding to the modified grating design function is determined.

On page 5, lines 11 through 15, please amend as follows:

The second grating design amplitude and the corresponding spectral response data are shown in Figures 2(a-d). Clearly the spectral characteristics in the central part 100 of the wavelength range in Figure 2(b), which is the functional portion of the spectral domain in the

example embodiment, are less than perfect (compare central part 102 in Figure 1(b)). As a next step these characteristics are modified.

On page 5, line 23 through page 6, lines 1-2, please amend as follows:

The above method steps are then iterated in the example embodiment, until a desired improvement is achieved. Figures 4 and 5 show the level of convergence after 8 and 150 iterations for the 17-channel grating design. For each of the Figures 4 and 5, (a to d) show calculated spectral characteristics and design of the 17-channel FBG. As can be seen from a comparison of Figure 1(a) and Figure 5(a) the optimisation process embodying the present invention has improved by about 13.5% to a lower value, while, due to the nature of the optimization process embodying the present invention, the superb spectral characteristics of the design are preserved (compare Figures 1(b), (d), and Figures 5(b), (d)).

On page 6, lines 3 through 9, please amend as follows:

It will be appreciated by a person skilled in the art that the step of modifying the second response function to create the third response function may further be conducted in a manner such that the modified response function has a desired response characteristic in at least one portion of the spectral domain other than the functional portion of the spectral domain, by e.g., replacing the corresponding at least one portion of the spectral domain in the second response function with the desired response characteristic. At the same time, it will be appreciated that parts of the spectral domain need to ~~remain to~~ be allowed to evolve during the iteration process.